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4.3 WATER QUALITY AND HYDROLOGY

INTRODUCTION

This section discusses project impacts on water quality and hydrology that will result from each project alternative.

IMPACTS EVALUATED IN OTHER SECTIONS

Some issues that may affect surface water quality and hydrology have been evaluated in other sections. Potential water quality and hydrology impacts addressed in other sections are:

- Water Quality Related to Human Health. These issues are addressed in Section 4.4 Public Health and Safety.
- Erosion Due to Construction. Erosion caused by construction within designated construction zones is addressed in Section 4.2 Geology, Soils, and Seismicity.

AFFECTED ENVIRONMENT (SETTING)

Wastewater Quality

The project will use treated wastewater from the White Slough Water Pollution Control Facility (treatment plant) for irrigation and fire control purposes and possibly as supply for restroom toilets. Treatment plant improvements will occur as part of the project so that the recycled water will comply with Title 22 criteria for reclamation. Water quality also will be monitored as required by Title 22. With the treatment plant improvements, total suspended solids (TSS) will be reduced to 10 mg/L (pers. comm Rob Beggs, West-Yost Associates). Available effluent quality data are summarized in Table 4.3-1.

Groundwater Quality

Because of treatment plant upgrades from secondary to tertiary treatment, there is a reduction in pollutant loads of some constituents, such as bacteria and TSS, relative to existing conditions. Thus, the impact to groundwater quality is reduced relative to existing conditions. The project will also use groundwater wells for potable water for the facility. The impact of groundwater quality on human health is discussed in section 4.4 Public Health and Safety. Water quality from samples collected from two monitoring wells on the project grounds as part of the treatment plant monitoring wells quarterly analysis are presented in Table 4.3-2.

Table 4.3-1

White Slough Water Pollution Control Facility Effluent Quality

	1995	1996	1997	1998	1995-1998 Average	Median and Maximum (in parentheses) [a,b]
NH3-N (mg/L)	1.4	2.4	1.6	0.8	1.5	N/A
NO2-N (mg/L)	0.40	0.85	0.35	0.45	0.51	N/A
NO3-N (mg/L)	8.0	7.5	7.1	6.2	7.2	N/A
TSS (mg/L)	10.8	8.3	11.2	11.2	10.4	(10)[c]
Settleable Solids (mg/L)	0.29	0.0016	0.0044	0.013	0.077	N/A
pH	7.2	7.0	7.0	7.0	7.1	N/A
°F	73	74	74	73	73	N/A
BOD (mg/L)	9.0	8.3	9.0	8.6	8.7	(10)[c]
COD (mg/L)	39	25	26	27	29	N/A
Total Coliform Bacteria	N/A	N/A	N/A	N/A	N/A	2.2 (23)[c]
Total Dissolved Solids (mg/L)	N/A	N/A	N/A	N/A	N/A	410
Cyanide(µg/L)	N/A	N/A	N/A	N/A	N/A	<10 (49)
Lindane (µg/L)[d]	N/A	N/A	N/A	N/A	N/A	0.01 (0.051)
Total Lead (µg/L)	N/A	N/A	N/A	N/A	N/A	1.5 (10)
Total Mercury (µg/L)	N/A	N/A	N/A	N/A	N/A	<0.2 (0.63)
Total Zinc (µg/L)	N/A	N/A	N/A	N/A	N/A	110 (160)

Source: White Slough Water Pollution Control Facility, 2000

[a] From Tentative Waste Discharge Requirements for White Slough Water Pollution Control Plant, Lodi, San Joaquin County
[b] Monitoring results for other constituents did not indicate that any would be discharged at a level that would cause, have reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard.
[c] The maximum numbers for TSS, and BOD, and median and maximum numbers for total coliform bacteria in this column reflect the expected numbers after improvements to the treatment plant that will be implemented prior to the proposed project.
[d] Based on 13 analyses from through 1995.
N/A - Data not available

Table 4.3-2

White Slough Water Pollution Control Facility Groundwater Monitoring

Well WSM#	Date	Nitrates (mg-N/L)	Specific Conductivity (µmhos/cm)	Fecal Coliform (mpn/100mL)	COD (mg/L)	Water Level (feet above mean sea level)
6	3/16/99	21	1320	<2	12	-1.75
7	3/16/99	16	1250	<2	21	-0.68
6	5/12/99	25	1390	<2	ND[a]	-2.58
7	5/12/99	16	1110	<2	12	-0.6
6	9/3/99	55	1600	<2	8.2	-5.33
7	9/3/99	11	1300	<2	8.2	-4.27
6	11/3/99	15	1390	<2	8.2	-5.17
7	11/4/99	15	1250	<2	8.2	-2.77
6	1999 average	29	1425	<2	9.5	-3.71
7	1999 average	14.5	1228	<2	12.4	-2.55

[a] ND = value below detection. Not included in 1999 average

Water Quality Regulations

Surface water quality is regulated to protect aquatic life and human health according to the provisions of the Federal Clean Water Act (and associated federal regulations) and the California Porter-Cologne Water Quality Control Act, referred to respectively as the Federal and State Acts. The State Act established the nine Regional Water Quality Control Boards (Regional Boards) and the State Water Resources Control Board (State Board). In California, the discharge permitting provisions of the Federal Act have been delegated by U.S. EPA to the State and Regional Boards. The Federal Act has led to the development of aquatic life water quality criteria (enforceable) and water quality guidelines (non-enforceable); the State Act has led to water quality objectives (enforceable) to protect aquatic life from adverse impacts for numerous water quality constituents. The criteria, guidelines, and objectives are hereinafter referred to collectively as criteria.

Requirements for wastewater reuse are established in Title 22 Chapter 3. Section 60313b Landscape Irrigation states that reclaimed water used for the irrigation of parks, playgrounds schoolyards, and other areas where the public has similar access or exposure shall be at all times an adequately disinfected, oxidized, coagulated, clarified, filtered

wastewater or a wastewater treated by a sequence of unit process that will assure an equivalent degree of treatment and reliability. The wastewater shall be considered adequately disinfected if the median number of coliform organisms in the effluent does not exceed 2.2 per 100 ml, as determined from the bacteriological results of the last 7 days for which analyses have been completed, and the number of coliform organisms does not exceed 23 per 100 ml, in any sample.

The existing Waste Discharge Requirements for White Slough Water Pollution Control Plant (Discharge Permit) provides reclamation specifications, receiving water limitations, and groundwater limitations designed to protect groundwater and surface waters and to protect public health and safety, including the following:

1. The discharge shall not cause the degradation of groundwater or any water supply.

2. Discharge of recycled water and untreated industrial wastewater (reclaimed water) to surface waters or surface water drainage courses is prohibited.

3. The discharge shall remain in the designated reclamation area at all times.

4. Use of reclaimed water shall be limited to surface irrigation of fodder, fiber, or seed crops, or orchards and vineyards, the closed loop cooling water system at the cogeneration facility, and mosquito fish hatchery ponds. Irrigated crops shall not be used for human consumption (either direct or indirect). Additional reclamation uses may be approved by the Executive Officer.

5. Reclaimed water use shall meet the criteria contained in Title 22, Division 4, CCR (Section 60301 et. seq.).

6. Public contact with the reclaimed water shall be precluded through such means as fences, signs, and other acceptable alternatives.

7. Reclaimed water for irrigation shall be managed to minimize erosion, runoff, and movement of aerosols from the disposal area.

8. Direct or windblown spray shall be confined to the designated disposal area and prevented from contacting drinking water facilities.

9. The discharge of recycled water (unchlorinated domestic effluent) in excess of the following limits to ponds for irrigation usage is prohibited:

Constituent	Units	Monthly Average	Daily Maximum
BOD_5*	mg/l	40	80
Settleable Matter	ml/l	0.2	0.5

* 5-Day, 20ºC, Biochemical Oxygen Demand

10. Areas irrigated with reclaimed water shall be managed to prevent breeding of mosquitoes. More specifically,

    a. Tail water must be returned and all applied reclaimed water and any additional supplement irrigation water must infiltrate completely within a 48-hour period.

    b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation.

    c. Low pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store reclaimed water.

11. Storm water runoff from the irrigation field shall not be discharged to any surface water drainage course within 30 days of the last application of reclaimed water.

12. There shall be no irrigation or impoundment of reclaimed water within 150 feet of any domestic water well.

13. All reclaimed water equipment, pumps, piping, valves, and outlets shall be appropriately marked to differentiate them from potable facilities, and these shall be of a type, or secured in a manner, that permits operation by authorized personnel only.

14. Conspicuous warning signs indicating that reclaimed water is in use shall be posted at least every 500 feet, with a minimum of a sign at each corner of the parcels and at access road entrances.

15. Supplementing reclaimed water by connection with a domestic drinking water source or irrigation or industrial wells requires an air gap separation device.

16. Application of reclaimed water shall be at reasonable rates considering the crop, soil, climate, and irrigation management system. The nutrient loading of the disposal area, including the nutritive value of organic and chemical fertilizers, applied biosolids, and of the reclaimed water, shall not exceed the crop demand.

17. Neither the treatment nor the use of reclaimed water shall cause a pollution or nuisance as defined by Section 13050 of the California Water Code (CWC).

Numeric and narrative water quality criteria have been developed by EPA and other agencies to protect aquatic life and to protect against aesthetic water quality impacts.

Specific regulations that relate to inland surface waters are described below.

The inland surface waters in the project area are within the jurisdiction of the Central Valley Regional Water Quality Control Boards (CVRWQCB). The CVRWQCB has a Water Quality Control Plan for basins within its jurisdiction (Basin Plan). The Basin Plan identifies beneficial uses of waters, establish numeric and narrative objectives for protection of beneficial uses, and set forth policies to guide the implementation of programs to attain the objectives.

The State Water Resources Control Board (SWRCB) Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan) establishes water quality objectives which, when implemented will: (1) provide reasonable protection of municipal, industrial, and agricultural beneficial uses; (2) provide reasonable protection of fish and wildlife beneficial uses at a level which stabilizes or enhances the conditions of aquatic resources; and (3) prevent nuisance for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary.

The Federal Rule, Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (California Toxics Rule or CTR, promulgated May 18, 2000), provides for the State of California numeric water quality criteria for priority toxic pollutants necessary to fulfill the requirements of section 303(c)(2)(B) for the Clean Water Act in the State of California. The State Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries (effective May 22, 2000) established a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency.

The EPA and State Water Resources Control Board have established antidegradation policies. The federal policy, which is set forth in 40 CFR 131.12, states that:

- Existing instream water uses and the water quality necessary to protect existing uses (e.g., fish spawning, municipal water supply, and warm water aquatic habitat) shall be maintained and protected; and
- Where the quality of waters exceeds levels necessary to support beneficial uses, that quality shall be maintained and protected unless the State finds that allowing water quality degradation is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing water quality degradation, the State shall assure water quality is adequate to fully protect beneficial uses.

As required by 40 CFR 131.12, the State has developed an Antidegradation Policy that is consistent with the federal policy described above; the state policy is described in the Administrative Procedures Update of 2, July 1990 entitled *Antidegradation Policy Implementation for NPDES Permitting*. The Antidegradation Policy applies to inland surface waters, ocean waters, and groundwaters.

The State Antidegradation Policy includes a technical (water quality and beneficial use impacts) and a non-technical component (necessity for socioeconomic development, maximum public benefit).

- Technical. According to the Antidegradation Policy, the evaluation of project impacts on many water quality constituents is necessary to evaluate impacts on water quality relative to appropriate water quality objectives and impacts on beneficial uses. The State Antidegradation Policy guidelines state that, for NPDES permitting, the antidegradation analysis is the responsibility of the Regional Board and that the Regional Board shall comment on notices of preparation (NOPs) to ensure that it has sufficient information to conduct the appropriate antidegradation analysis.
- Non-technical. Determinations as to whether the proposed project "is necessary to accommodate important economic or social development" and whether "maximum public benefit" is not within the scope of this EIR.

Thus, a complete analysis of the consistency of the project with the Antidegradation Policy is not possible in this EIR, nor is it necessary according to the State Antidegradation Policy. Therefore, a specific antidegradation policy evaluation criterion was not developed. However, the technical information in this document is intended to provide the basis for any findings that the Regional Board may be required to make.

GOALS, OBJECTIVES, AND POLICIES

Table 4.3-3 identifies General Plan water quality and hydrology goals, objectives, and policies that provide guidance for water use patterns. The table also indicates which Water Quality and Hydrology evaluation criteria are responsive to each set of policies.

Table 4.3-3

General Plan Goals, Objectives, and Policies – Water Quality and Hydrology

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Relevant Evaluation Criteria[1]
City of Lodi General Plan Policy Document	Section 7. Conservation Element –	Goal A	To protect water quality in the Mokelumne River, Lodi Lake, and in the area's groundwater basin.	1 and 2
City of Lodi General Plan Policy Document	Section 9. Health and Safety	Goal A	To prevent loss of lives, injury, and property damage due to flooding.	3

Table 4.3-3

General Plan Goals, Objectives, and Policies – Water Quality and Hydrology

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Relevant Evaluation Criteria[1]
City of Stockton General Plan Policy Document	Water Facilities	Goal 1	Conserve groundwater and surface water in order to ensure sufficient supplies of good quality water.	1 and 2
City of Stockton General Plan Policy Document	Flood Hazards	Goal 1	To protect the community from the risk of flood damage.	3
San Joaquin County General Plan 2010 Volume I: Policies/ Implementation	Water Quality	Policies 1 – 3	1) Water quality shall meet the standards necessary for the uses to which the water resources are put. 2) Surface water and groundwater quality shall be protected and improved where necessary. 3) The use and disposal of toxic chemicals, the extraction of resources, and the disposal of wastes into injection wells shall be carefully controlled and monitored to protect water quality.	1 and 2
San Joaquin County General Plan 2010 Volume I: Policies/ Implementation	Public Health and Safety	Policies 1 and 3	1) New residential, public, commercial, and industrial development shall be required to have protection from a 100-year flood, 3) In designated floodways, uses shall be restricted to those that are tolerant of occasional flooding, such as agriculture, outdoor recreation, extraction, and natural resource areas.	3

Source: Parsons, 2001

[1] See Table 4.3-4

EVALUATION CRITERIA WITH POINTS OF SIGNIFICANCE

Evaluation criteria for water quality and hydrology are presented in Table 4.3-4.

Table 4.3-4

Evaluation Criteria with Point of Significance – Water Quality and Hydrology

Evaluation Criteria	As Measured by	Point of Significance	Justification
1. Will the project cause a degradation of surface water quality?	Estimated project impact on receiving water quality relative to existing conditions	Numeric and narrative objectives in the Basin Plan, Bay-Delta Plan, and CTR	City of Lodi General Plan City of Stockton General Plan San Joaquin County General Plan Basin Plan, Bay-Delta Plan, CTR, Waste Discharge Requirements for White Slough Water Pollution Control Plant (Discharge Permit)
2. Will the project cause degradation of groundwater quality?	Estimated project impact on groundwater quality relative to existing conditions	Requirements for wastewater reuse in Title 22 and reclamation specifications in the Discharge Permit	City of Lodi General Plan City of Stockton General Plan San Joaquin County General Plan Discharge Permit, Title 22 Chapter 3. Section 60313b Landscape Irrigation,
3. Will the project cause an increase in flooding resulting in loss of lives, injury, and property damage due to flooding?	Estimated project impact on flooding relative to existing conditions	Prevent an increase in flooding which could result in loss of lives, injury, and property damage due to flooding.	City of Lodi General Plan City of Stockton General Plan San Joaquin County General Plan

Source: Parsons, 2001

METHODOLOGY

This impacts analysis is based on a review of relevant technical reports and water quality data.

ENVIRONMENTAL CONSEQUENCES (IMPACTS) & RECOMMENDED MITIGATION

This section describes potential water quality and hydrology environmental impacts and mitigation measures. Table 4.3-5 summarizes project impacts on water quality and hydrology.

Table 4.3-5

Water Quality and Hydrology Impacts

Evaluation Criteria	Point of Significance	Impact	Type of Impact[1]	Level of Significance[2]
Will the project cause a degradation of surface water quality?	Numeric and narrative objectives in the Basin Plan, Bay-Delta Plan, and CTR	No exceedence of water quality objectives	C, O&M	⊙
Will the project cause degradation of groundwater quality?	Protection of the area's groundwater basin	No significant degradation of groundwater quality	O&M	⊙
Will the project cause an increase in flooding resulting in loss of lives, injury, and property damage due to flooding?	Prevent an increase in flooding which could result in loss of lives, injury, and property damage due to flooding.	No increase in flooding over existing conditions	O&M	==

Notes: 1. Type of Impact:
C Construction
O&M Operation and Maintenance

2. Level of Significance:
== No impact
❍ Less than significant impact; no mitigation proposed
⊙ Significant impact before mitigation; less than significant after mitigation
● Significant impact before and after mitigation

Impact: 4.3.1 Will the project cause a degradation of surface water quality?

Analysis: *No Impact; No Project Alternative*

Surface water quality will not change relative to existing conditions.

Potentially Significant; Other Project Alternatives

Included in the project are design and best management practices (BMPs) to insure that irrigation water will be confined to the project area and no runoff to surface waters will occur. It is estimated that approximately 2.85 MGD of secondary treated effluent, industrial wastewater, and groundwater are now being applied in the Project area, and that under Project conditions approximately 2.5 MGD of reclaimed water will be

applied for irrigation purposes, a reduction of 0.35 MGD. The rate of application of irrigation water will not increase over existing conditions. Wastewater used for fire control will be limited in volume and duration of discharge. No wastewater from fire control should reach surface waters. Wastewater used for restroom toilets will be discharged to the City sewer system and will not directly enter surface water bodies. Therefore the impact of the project on surface waters from the use of wastewater is less than significant.

Assuming a runoff coefficient (C) of 0.1 (Lindberg, 2000) for alfalfa, corn and pasture, and an infiltration value of 0.033 (based on the current application rates), the runoff from the site's current conditions with an irrigated acreage of 310 acres is approximately 1.023 acre-ft/day (Q=0.1*0.033 ft/day*310 acres). Using a runoff coefficient (C) of 0.15 (Lindberg, 2000) for turf, and an infiltration value of 0.011 (based on CIMIS data for Lodi), the runoff from the proposed condition with in irrigated acreage of 250 acres will be approximately 0.415 acre-ft/day (Q=0.15*.011 ft/day*250 acres). Therefore, runoff from application of irrigation water will not increase over existing conditions. Irrigation runoff will not increase over the existing conditions and will be retained onsite.

In addition, Water Quality/Hydrology Project Measure 2 (Agrochemical and Fertilizer BMP) is designed to prevent offsite movement of pesticides and nutrients. Water Quality/Hydrology Project Measure 2 is a Pesticide and Fertilizer Management Program that will be developed to incorporate State Water Resources Control Board Technical Advisory Committee management recommendations for Irrigated Agriculture and Pesticides. Water Quality/Hydrology Project Measure 2 is integrated into the project to minimize offsite movement of pesticides. The measure includes, but is not limited to, the following:

- Control pollutants at their source through the verification of the need and amount of pesticides and fertilizer through soil and plant tissue testing, utilization of Integrated Pest Management procedures, utilization of the least toxic, least soluble, least persistent agrochemical, and careful evaluation and application of the lowest amount of agrochemical that will achieve the management goal.
- Reduce the mobilization of pollutants through control of soil erosion, irrigation runoff, and subflow.
- Utilize, dilute, detoxify, or dispose of excess pollutants correctly through proper handling (mixing and storage) and disposal practices.

These water quality/hydrology project measures will insure that no degradation of water quality in surface waters will occur from project irrigation.

It is estimated that an average of approximately 510 million gallons of reclaimed water are now being applied annually in the project area and that under project conditions 430 million gallons of reclaimed water will be applied annually, a reduction of approximately 16 percent. In addition, the quality of water used for irrigation will improve with tertiary treatment plant improvements designed to insure that irrigation water will meet Title 22 requirements, and biosolids will no longer be applied in the project area. The project could cause indirect impacts to surface water quality if the reclaimed water and biosolids that are no longer applied in the Project area are improperly disposed of elsewhere. Mitigation Measure 4.3-1 (Reclaimed Water and Biosolid Disposal) will insure that reclaimed water and biosolids, which must be disposed elsewhere as a result of the project will be handled in a manner to insure protection of surface and groundwater quality.

Also included in the project description are measures (Water Quality/Hydrology Project Measure 3- Storm Water Detention) to ensure that drainage from stormwater will not increase above current conditions.

The City recommends that storm drainage facilities be designed for a storm return frequency of once in one hundred (100) years. Runoff volumes are computed, using the Rational Formula, as the product of runoff coefficient, rainfall depth and contributing area (Q=CiA). Calculations assume that the site is not saturated from previous rainfall. The site is currently farmed with alfalfa, corn, and pasture; a runoff coefficient (C) of 0.1 is assumed (Lindberg, 2000). The proposed project will be turf; a run off coefficient of 0.15 is assumed for non-hardscape surfaces. A hundred year storm of 3.6 inches (0.3 feet) has been used. The total project site area is 400 acre. The total coverage of hard surface areas (run off coefficient of 0.95) is approximately 150 acres.

Based upon the above factors and assumptions, the existing runoff from the site during the 100-year storm is approximately 20 acre-ft. Currently all runoff is routed through the treatment plant. The runoff from the same storm for the developed project site will be 74 acre-ft. Retention of runoff from the newly created impervious surfaces and irrigation on City-owned property will be in the vicinity of the project site. It is estimated that retention on City-owned property will require use of approximately 54 acres.

Rainfall intensity for the project is estimated from a typical intensity vs. duration curve as shown in Lindberg's CE Reference Manual (2000). Volume of runoff = C*rainfall*area/12 (acre-ft): C=weighted runoff coefficient, 0.7. The allowable discharge of 242 cfs is based on an estimated time of concentration of 30 minutes. The volume of runoff vs. duration and allowable discharge vs. duration is plotted. The estimated volume of the retention basin is the maximum difference between the volume of runoff and the allowable discharge, 73 acre-ft.

The City will allow a storm water collection system design at a 10-year intensity (an allowable discharge of 145 cfs based on an estimated time of concentration of 30 minutes). Temporary ponding on-site will be necessary to accommodate the additional runoff of 107 cfs from the 100-year event. Assuming the design of a collection system for 10-year intensity, the estimated volume of an on-site retention basin for the 100-year event will be 61 acre-ft.

Table 4.3-6

10-year Storm Project Site Conditions

Duration (min)	Duration (min/1000)	Intensity (in/hr)	Depth (in)	Volume (acre-ft)
5	0.005	9.8	0.82	19.06
10	0.01	8.95	1.49	34.81
15	0.015	7.5	1.88	43.75
30	0.03	6	3.00	70.00
60	0.06	4	4.00	93.33
120	0.12	2.2	4.40	102.67
180	0.18	1.6	4.80	112.00
360	0.36	1	6.00	140.00
720	0.72	0.7	8.40	196.00

Source: Parsons, 2001

C, weighted value (turf+hard surface) = 0.7 Area = 400acres

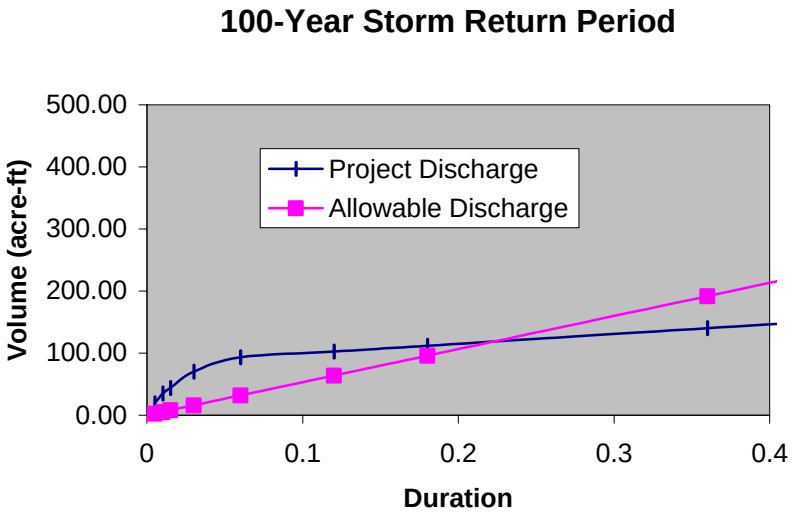
Table 4.3-7

Allowable Discharge Based on Existing Site Conditions

Duration (min)	Duration (min/1000)	Duration (sec)	Volume (cu-ft)	Volume (acre-ft)
5	0.005	300	116,100	3
10	0.01	600	232,200	5
15	0.015	900	348,300	8
30	0.03	1,800	696,600	16
60	0.06	3,600	1,393,200	32
120	0.12	7,200	2,786,400	64
180	0.18	10,800	4,179,600	96
360	0.36	21,600	8,359,200	192
720	0.72	43,200	16,718,400	384

Source: Parsons, 2001

Time of Concentration = 30 min
C = 0.1 (agricultural land)
I = 3.6 in/hr
Area = 400 acres
Flow = 240 (acre-in)/hour 387 cfs



Although the amount of newly generated runoff is small in comparison to the size of the parcel, provisions will be made as part of the project to assure that it will have an insignificant effect on surface waters. A grading and drainage plan prepared by properly licensed personnel and implemented in conjunction with the project will assure that surface waters and properties in the vicinity are not adversely affected.

Best management practices during the construction phase of the project as specified in the Project Storm Water Pollution Prevention Plan (Water Quality/Hydrology Project Measure 4) will prevent erosion. A grading and drainage plan, in conjunction with other project plans and specifications, shall be prepared and submitted for approval by the City Engineer. Compliance with erosion control measures in Chapter 70 of the UBC during construction is required and the City Water/Wastewater Superintendent will provide monitoring. When developed, all areas of the project site will be landscaped or covered with structures or pavement, therefore erosion impacts will be less than significant

The impact of the project on surface water quality based on evaluation criterion 1 is potentially significant due to the potential for improper biosolid disposal.

Mitigation: **4.3-1: Reclaimed Water and Biosolid Disposal**

The City of Lodi has developed a Wastewater Master Plan, which develops feasible alternatives for wastewater and biosolid disposal to accommodate projected future growth in the City of Lodi. These alternatives take into consideration the possible changes in disposal options with the development of the Project. The Discharge Permit will be amended as part of the tertiary treatment plant additions and the additional project uses.

The City of Lodi will insure that reclaimed water and biosolids, which must be disposed elsewhere as a result of the Project, will be handled in a manner to insure protection of surface and groundwater quality and to insure compliance with existing regulations for the protection of surface and groundwater quality. The City shall obtain 210 acres of agricultural land that is or will be within City limits for biosolid disposal to compensate for the biosolid disposal land to be used for the ProStyle Sports Complex. Plans to properly dispose of the wastewater must be approved by the City prior to Project construction.

After Mitigation: *Less than Significant; All Alternatives*

Impact: 4.3.2 Will the project cause a degradation of ground water quality?

Analysis: *No Impact; No Project Alternative*

Wastewater reuse will not change relative to existing conditions.

Potentially Significant; Other Project Alternatives.

The rate of application of irrigation water will decrease (from an existing 2.85 mgd to a maximum 2.5 mgd with the project) over existing conditions and application of biosolids on the project site will be eliminated. The project could cause indirect impacts to ground water quality if the reclaimed water and biosolids that are no longer applied in the project area are improperly disposed of elsewhere. However, mitigation measure 4.3-1 (Reclaimed Water and Biosolid Disposal) will ensure that reclaimed water and biosolids that must be disposed elsewhere as a result of the project, will be handled in a manner that protects surface and groundwater quality. The water used for project irrigation will meet Title 22 regulations due to improvements to the treatment plant. In addition, Water Quality/Hydrology Project Measure 5 will insure that the use of wastewater will meet the reclamation specifications provided for in the Discharge Permit that will be amended to include the additional project uses and facilities.

Water Quality/Hydrology Project Measure 2 (described above under 4.3-1) is designed to prevent offsite movement of pesticides, and will also protect groundwater quality. Therefore, the impact of the project on groundwater based on evaluation criterion 2 is potentially significant.

Mitigation: See Mitigation Measure 4.3-1 listed above.

After Mitigation: *Less than Significant; All Alternatives*

Impact: 4.3.3 Will the project cause loss of lives, injury, and property damage due to flooding?

Analysis: *No Impact; All Alternatives*

Potential flooding will not change relative to existing conditions. Because of the project measures designed to prevent runoff of irrigation water, no flooding from irrigation is anticipated. The project measures designed to insure that the peak flow rate of drainage from stormwater runoff will not increase over existing conditions will insure that no increase over existing conditions in flooding at any hydraulic restrictions located downstream of the project will occur. The storm water drainage system will be able to accommodate a 100-year storm (Water Quality/Hydrology Project Measure 3 Storm Water Detention). According to QUAD (1995 Draft Environmental Impact Report - California Youth Soccer Associates), the alfalfa and winter barley that is currently grown in the project area has a runoff coefficient of 0.1 while the project turf has a runoff coefficient of 0.15. This means that 90 percent of rainfall would typically infiltrate in an alfalfa and winter barley field, and 85 percent of rainfall would be expected to infiltrate turf. In addition, currently 790 acres (of 880 total acres of land able to be irrigated with treated water) are irrigated croplands, but with the project, approximately 250 acres will be turf and

the remaining project area (150 acres) will be hard surface. Therefore, the project has the potential to increase runoff. Project measures will insure that the retention (and therefore infiltration) time of the stormwater is increased over existing retention time, thus reducing runoff to pre-project levels. Water Quality/Hydrology Project Measure 3 (described above) specifies that the peak stormwater runoff rate and runoff volume won't increase over current conditions, thereby preventing an increase in flooding. Therefore, no loss of lives, injury, or property damage will occur with a 100-year storm. The project area is located outside the 100-year flood plain, therefore the project will not cause the 100-year flood elevation to increase as a result of fill placement. Therefore no impact of the project on hydrology will occur based on evaluation criterion 3.

Mitigation: No mitigation is needed.

CUMULATIVE IMPACTS

Cumulative impacts are defined as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. There are no nearby projects within the Lodi city limits. Four projects will be located in adjacent San Joaquin County lands. These projects will result in increased land coverage and therefore, possible increases in urban runoff during storm events.

Under project conditions, the quality of water used for irrigation is improved (through treatment plant upgrades) and reduced in volume. Therefore, the project provides a net improvement to surface and ground water quality and no cumulative impacts on surface and ground water quality will occur. The project will not change stormwater volume or peak flow relative to existing conditions and the project will not cause the 100-year flood elevation to increase as a result of fill placement. Since potential flooding will not change relative to existing conditions, no cumulative impacts on flooding will occur.